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ABSTRACT

Impacts of both the originally proposed and the recently adopted University of California freshman admissions formulas on the regularly admitted freshman at Berkeley in the fall of 1972 and 1973 were assessed. The sex, ethnic characteristics, and graduation rates are examined for students who would have been included and excluded by the formulas. Additionally, a simulation is made that permits a comparison of the newly eligible and newly ineligible groups. The simulation assumed the University used a 3.3 high school grade point average (HSGPA) cut-off instead of the actual 3.0. Among the results are the following: (1) for both classes, the level of HSGPA is only weakly related to whether a student graduates; (2) neither the new admissions formula nor the original one predicts graduation better than HSGPA, and frequently they do worse; (3) the formulas would have excluded slightly more Blacks and Chicanos than Whites and Asians; and (4) students made ineligible by the formulas graduated at a rate only slightly lower than the rest. Results of the simulation study show: use of the formulas results in a net loss in the enrollment of women and minorities, and application of the formulas results in few students graduating within four or five years. Implications of the new admission's formula are considered. (SW)

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July, 1978

Freshman Admissions by Formula: A Retrospective Study of
Impact on Student Mix and Graduation Rates at Berkeley

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SUMMARY

This study assesses some impacts of both the originally proposed and the recently adopted University of California freshman admissions formulas on the regularly admitted freshmen at Berkeley in the Fall of 1972 and 1973. The sex, ethnic make-up, and graduation rates are examined for students who would have been included and excluded by the formulas. Additionally, because the new admissions procedures will admit some new students at the expense of some presently eligible students whom it will exclude, a simulation is made which permits a comparison of the newly eligible and newly ineligible groups. This simulation assumed the University in 1972 and 1973 used a 3.3 high school grade point average (HSGPA) cut-off instead of the actual 3.0.

The results show:

1. For both classes, the level of HSGPA is only weakly related to whether a student graduates or not. The test scores have no usable, direct relationship as a general predictor of graduation.
2. Neither the new admissions formula nor the original one predicts graduation better than HSGPA. In fact, frequently they do worse.
3. The formulas would have excluded slightly more Blacks and Chicanos than Whites and Asians.
4. Students made ineligible by the formulas graduated at a rate only slightly lower than the rest.

The results of the simulation study show:

5. Use of the formulas results in a net loss in the enrollment of women and minorities. The group of students eligible by HSGPA

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but who would be ineligible by the formulas contains more women and minorities than the group made eligible by the formulas but who would not be eligible by HSGPA alone. The original formula, which has a greater emphasis on test scores, has a stronger bias toward males and Whites at the expense of women and minorities than does the formula actually adopted.

6. Application of the formulas results in fewer students graduating within four or five years. The group made ineligible by use of either formula graduates at a higher rate than the group made eligible by the formula. The magnitude of this difference in graduation rates between the groups becomes more pronounced with the formula which places a greater stress on test scores.

This study should be replicated on the other campuses of the University to confirm the present findings. These findings fit predictions made from previous research nationally. Because of the biases in the new admission's formula in comparison with existing procedures, it seems reasonable to expect a shift in the fields of study selected by new students and consequent pressure on existing faculty staffing patterns.

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Impact on Student Mix and Graduation Rates at Berkeley

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In the fall of 1977 several changes were made in undergraduate admissions requirements for the University of California. Perhaps the most controversial was the adoption for Fall 1979 of a formula which combines scholastic aptitude test scores (SAT or ACT) with high school grade point average (HSGPA) in core courses to form an index for determining eligibility. Prior to this the large majority of students were admitted on the basis of their HSGPA alone. The present study contributes to an understanding of the potential impact of the formula by applying it to the high school grades and test scores of the regularly admitted freshmen at UC Berkeley in the Fall of 1972 and 1973. The results are analyzed in terms of the impact of the formula on the sex, ethnic composition, and four and five year graduation rates of these freshmen. Both the amended formula to be used in 1979 and the original formula proposed in 1975 by the Board of Admissions and Relations with Schools (BOARS) are examined. The original formula stresses test scores more heavily than the formula finally adopted, but both would admit students with grades above 3.3 regardless of their test scores.

Both formulas bring in some students who were previously ineligible, i.e. they admit students with relatively stronger test scores but lower grades. The formulas also exclude some previously eligible students who have relatively lower test scores but higher grades. This study attempts to estimate the potential characteristics and graduation rates of these two newly eligible and ineligible groups by assuming that in 1972 and 1973 the University was using a slightly higher grade point minimum than was actually the case. This assumption makes it possible to contrast four groups in all: students eligible by both formula and by grades alone, students ineligible by either procedure, students eligible by formula but not by grades, and students eligible by grades but not by formula.

The report does not attempt to recapitulate the discussion and purposes surrounding the introduction of the new freshmen formula except to mention several items which are central to understanding the concerns which this study addresses.

It is important to know that the introduction of the formula attempts to accomplish several things at once: counteract a "crisis in academic standards," provide an improved basis over high school grades alone for selecting among the mandated top 12 1/2% of high school graduates in California by compensating for differences in high school grading practices and alleged grade inflation, and provide leadership in high school education.

BOARS argued that because the same standardized tests are given to all college applicants, use of test scores would help adjust for the fact that certain high schools have tougher grading practices than others. Not discussed was the companion fact that within schools of comparable standards, students with high test scores and lower grades will be admitted at the expense of students with stronger academic records and lower test scores. Which group of students is in fact "better"? What does it mean to have relatively low grades in a time of alleged grade inflation? Will the use of test scores in a formula inadvertently favor a particular ethnic group or sex?

It is well known that major problems exist with scholastic aptitude tests. Particularly worrisome is the fact that some people who do not do well on tests, for whatever reason, do perform well academically and in sustained, real-life situations. Conversely, some students who test well do not perform well in real-life settings. The failure of tests to predict performance with uniform accuracy in all real-life settings becomes additionally important because of the fact that student groups which differ in sex, ethnicity, major field, creative potential, and the like have been shown not to score at equal levels on tests of scholastic ability.

The main empirical yardstick used by BOARS for judging that test scores would be helpful in improving the quality of admitted students was selected studies predicting freshman and sophomore grades from SAT scores and HSGPA.

However, a strong case can be made that the University should be at least as interested in educating the students it admits to the point of degree completion as in maximizing first year grades. In fact, policies designed to maximize freshmen grades are of questionable value if the cost is having a

higher attrition rate. Because of these considerations, the present study shifts the evaluation criterion from early college grades to bachelor degree completion and graduation.

The prediction from past research is that, on the whole, students with relatively higher test scores than grades will persist to graduation less well than students whose grades are relatively better than their test scores. The former group, commonly known as underachievers, have been the subject of many attempts to raise their performance and persistence up to their apparent scholastic capabilities. But even with special attention, they have generally continued to perform less well relevant to their apparent capacity than their counterparts who seem to achieve beyond their capabilities.

Background

The initial plan proposed by BOARS in about 1975 was to admit freshmen beginning in 1978 according to a formula which gradually increased the weight given to SAT scores until, in 1980, the total score attained on the math and verbal SAT would be weighted equally with high school grades. The formula proposed was: admissions index = total SAT score + 500 x high school GPA. However, the formula that was finally adopted by the University and Board of Regents in October 1977 was a watered down version which weighted high school grades about six times as heavily as SAT scores. The formula adopted is: admissions index = .3 x total SAT score + 700 x high school GPA. Because this formula relies heavily on high school grades, which are the current admissions criterion, only a few borderline students will actually be affected by the change. Nonetheless, there is still concern about what impact the new formula will have.

This concern has been focused on two main issues: (1) will the policy actually achieve its objective of raising the academic quality of UC students, and (2) will the policy have a negative effect on the ethnic composition the student body by excluding disproportionate numbers of under-represented minorities?

Some information is already available on this latter question. The University's Systemwide admission office has applied the adopted formula to regularly admitted freshmen registered in the Fall of 1976 and 1977 at each of the campuses in the UC system. The percentage of all the students who

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would not have been eligible according to the new formula was higher for the under-represented ethnic minorities than for Whites. Furthermore, these studies examined rejected applicants and special action admits and found that the students who will be made eligible by the new formula may be disproportionately White. These results suggest that the implementation of the new formula will result in a net loss in the enrollment of regularly admitted under-represented minorities.

The specific impact of the new formula on the academic quality or success of UC students has received less attention. However, an extensive literature on academic achievement in college indicates that grades are the single best predictor of success in college. Nationwide, the correlation of high school grades to college grades averages around .50, whereas the correlation of SAT scores to grades is almost always less. Within the UC system the correlations tend to be lower, but the same pattern holds. Although predicting measures of academic achievement other than freshman grades is typically less accurate, high school grades are still usually the best predictor. For instance, in a national study of college students during the 1960's, Astin (1975) found that high school grades correlate .29 with persistence. College admissions test scores, on the other hand, were essentially unrelated to persistence once grades and other entering characteristics were controlled.

The present study provides data relevant to the impact of the BOARS formula on both the ethnic distribution and the academic success of Berkeley students. Although the Systemwide studies have found that ethnic minorities would have been disproportionately excluded by the new formula in 1976 and 1977, the generality of this finding remains in question. Thus we computed for each of the major ethnic groups the proportion of Berkeley freshmen who would have been excluded by the new formula in two earlier years, 1972 and 1973. Next we compared the academic success of Berkeley freshmen who would have been eligible by the new formula to that of freshmen who would not have been eligible. Academic success in this case was defined as graduation within four or five years. College grades and majors would have been considered, too, if they had not been difficult or impossible to obtain at the time of the study.

Finally, we created a simulation of the more critical comparison between the graduation rate of students who would be excluded by the formula to that of the students who would be brought in as replacements.

PROCEDURE

Information for the study was gathered from three sources: the campus Office of Institutional Research (OIR), graduation rosters, and a systemwide admissions tape provided through the Campus Office of Admissions and Records. OIR provided computer cards which contained the sex, ethnicity, and California residency status of all first time freshmen registered in the fall quarters of 1972 and 1973. To these cards was added the graduation status of each student. The 1972 freshmen appearing on the graduation rosters for the winter, spring, or summer quarters in 1976 and the 1973 freshmen graduating in comparable quarters of 1977 were identified by hand and coded as four-year graduates. The 1972 freshmen graduating in fall, 1976, or winter or spring, 1977, were coded as five-year graduates.

The systemwide admissions tape provided data on the entering characteristics (e.g. high school GPA in the University's required core, A- to -F, courses. SAT scores, special action and EOP status, etc.) of all students applying for the Fall quarters of 1972 and 1973. This information was extracted for those students who actually registered (i.e. those on the OIR computer cards), and a single file of 1972 and 1973 freshmen was generated. Only California residents were included. The results of this study are based on the regularly admitted students in this final file, including EOP students. The students admitted by special action are the subject of a separate study. (Jeffery and Frank, 1978). Most regularly admitted students meet the University's A-to-F requirements and have HSGPA's of 3.1 or above. A few are admitted on the basis of having a GPA from 3.0 to 3.09 and a total of 2500 or higher on the SAT and three required Achievement Tests. An even smaller number are admitted in regular status on test scores alone, regardless of their GPA or course distributions. These students must have a SAT total score of 1100 or higher and a minimum on three Achievement Tests of 1650 or higher with no individual test score under 500. In the present study, all students listed as being regular admissions but having GPA's under 3.0 were excluded from the main analyses. But because these students constitute the group most similar to the new students brought in by the BOARS formula (i.e. lower grades but high test scores), their graduation rates are reported in a separate section.

Relation of Admission Characteristics to Graduation

The admissions characteristics and graduation rates of regularly admitted 1972 and 1973 freshmen are reported in Table 1. The admission characteristics are remarkably similar for the two years. However, the four-year-graduation rate appears to have dropped slightly for the 1973 freshmen. Whether this small drop represents a chance fluctuation, an error in the hand tabulation of just the 1973 graduates, a unique characteristic of the 1973 freshmen, or the beginning of a new trend cannot be determined from this study. However, it should be pointed out that the 1973 freshman class was about 300 students larger than either preceding or subsequent classes.

In Tables 2 and 3 are the overall correlations between entering characteristics and graduation rates. Appendices A and B break down the graduation rate for different ranges of GPA and SAT scores. High school GPA shows a low, positive correlation with both four and five-year graduation rates. Scores based on the adopted BOARS formula, which is highly correlated with high school GPA (correlation coefficient = .98), show about the same level of correlation. However, although the correlations reach statistical significance, they are not high enough to be of practical value. The association of graduation with SAT scores is even lower and reaches statistical significance only with the larger 1973 class. Appendices A and B which give graduation rates by intervals of GPA and SAT scores, confirm that the graduation rates of students with low SAT scores are approximately equal to those with high SAT scores.

Tables 4 and 5 give the correlations separately for women and men. As can be seen, most of the overall correlation to graduation rate is contributed by the men. For women, the correlation between entering characteristics and graduation rate is practically nonexistent. All but two of the entering variables fail to produce a statistically significant correlation with graduation. In fact, the correlations between graduation rates and SAT scores are essentially zero, with as many of the correlations negative as positive. However, even for the women high school GPA is always a better predictor of graduation than are SAT scores.

Tables 6 and 7 show the same information in a different way. The entering characteristics of all graduates and nongraduates are compared. The differences between the groups are small but do reach statistical significance for high school GPA and the SAT math score as well as for both BOARS indices.

Impact of the Adopted BOARS Formula on Ethnic Composition

Tables 8 and 9 show the number and percentage of 1972 and 1973 freshmen in each of the major ethnic subgroups who would not have been regularly admitted if the new admissions formula had been in effect. In both years a disproportionate number of Blacks and Chicanos would have been ineligible. Although the numbers involved are small, this adverse effect of the formula does replicate the statistics Systemwide assembled for the 1976 and 1977 freshmen across the entire UC system.

Graduation Rates of Students Ineligible by the Adopted BOARS Formula.

The graduation rate of enrolled students who would have been excluded by the new admissions formula was lower than that of eligible students in both years. (see Tables 8 and 9). However, the critical comparison - students excluded by the new formula - cannot be done with existing data. Because the new students who would have been eligible if the formula had been in effect were not admitted we do not know how well they would have performed at Berkeley.

However, because such a comparison is essential to evaluating the impact of the new formula, we have simulated this critical group from available data, i.e. from the group of students who actually did enroll.

Simulation Study

Figure 1 shows the four possible categories into which a prospective student could fall. The comparison of interest for the purpose of evaluating the impact of the new admissions formula is between the excluded and replacement group indicated in the figure. In order to make this comparison, we had to create a simulation of the replacement group. To do so, we assumed that the criterion for admissions in 1972 and 1973 was a high school GPA of 3.3 rather than the 3.0 cut-off actually used. The purpose of this assumption was to create a pool of students - those with high school GPA's from 3.0 to 3.3 - who actually attended Berkeley but who could be considered ineligible for admission under a policy based on grades alone. In the 1972 class 586 students fell into this new category of being "inadmissible" on the basis of their grades. In the 1973 class the number was 624.

Next we set the cut-off point on the newly adopted BOARS index so that in each year the same number of students would be admissible with the BOARS formula as with a 3.3 GPA criterion. Although many of the students with high school GPA's below 3.3 were also below the adjusted cut-off on the new BOARS index, there were

some (48 in 1972 and 57 in 1973) who were above the BOARS cut-off and thus simulated the replacement group we needed. We also made a similar adjustment in the cut-off point of the original formula proposed by BOARS. Because of the heavier weight assigned to SAT scores by this formula, more students fell into the critical replacement group (168 in 1972, 195 in 1973).

Tables 10 through 13 allow comparisons between the excluded and replacement groups as well as providing figures for the students unaffected by the change in admission criterion from grades to a BOARS index. As can be seen in Tables 10 and 11, the same bias of the newly adopted formula in favor of Whites and males holds up even when the higher GPA cut-off is used. The percentage of Blacks in the excluded group (6.5% in 1972 and 4.5% in 1973) is higher than the percentage of Whites (1.8%) excluded. Similarly, 2.5% and 3.1% of the women were excluded in 1972 and 1973 respectively whereas only 1.8% and 1.6% of the men became ineligible. Furthermore, the numbers of Blacks and women whom the new formula would make eligible (i.e., those in the replacement group) do not compensate for those excluded. Thus, shifting to the formula results in a net loss in the representation of regularly admissible students from these groups on campus.

Although the impact of the new BOARS formula on the ethnic composition of the student body when a 3.3 cut-off is used in most instances parallels the impact when a 3.0 cut-off is used, two differences do exist. First, in the simulation study, no Chicanos are affected by the change in admissions policy whereas under the 3.0 cut-off a disproportionate number were excluded by a shift to the new BOARS index. Second, in the simulation study the Asians resemble other minority groups rather than Whites with a disproportionate number excluded and not replaced by the application of the formula.

Tables 12 and 13 present the results when the original formula proposed by BOARS is applied. In general, the impact of the original formula is similar to that of the one adopted except that the negative effect of the formula on the representation of minorities and women is even more pronounced.

The other main question addressed by the simulation study was whether applying the BOARS formula would increase the graduation rate of students at Berkeley. As can be seen in Tables 10 and 11, students not eligible by either criterion were less likely to graduate than students eligible by both criteria. However, the critical comparison between students in the excluded and replacement groups shows that those eligible only by GPA are more likely to graduate than those eligible only by the adopted BOARS formula. This pattern holds for

both the 1972 and 1973 freshmen. For the 1972 freshmen, 67% of the students who would have been excluded by the new BOARS formula graduated within five years whereas only 58% of the group who would have been admitted in their place graduated. For the 1973 freshmen, 39% of the excluded group graduated within four years in contrast to only 33% of the replacement group.

The negative effects on graduation rates are even stronger when the simulation is conducted with the original BOARS formula, which weighted SAT scores more heavily. In this case, whereas 64% of the 1972 freshmen in the excluded group graduated within five years, only 49% of the students brought in to replace them graduated in the same period. Similarly, 36% of the 1973 freshmen excluded by the formula but not by grades graduated within four years in contrast to only 27% of the replacement group. For each of these comparisons using the original formula, the differences are statistically significant at the .05 level.

Further inspection of the tables indicates that the higher graduation rate of the students excluded by the BOARS formula in comparison to the students in the replacement group holds for most of the individual subgroups as well as for the total group. In fact, the only comparison among the 28 which were made where the replacement group did better than the excluded group involved males (1973 with adopted formula). Among all the ethnic minorities and among the women, the excluded group always graduated at a higher rate than the replacement group. Thus, in the simulation study the formula, whether the adopted one or the original one proposed, not only excludes a higher proportion of minorities and women but also replaces the ones excluded with students who have a lower chance of graduation within the normal timetable of four or five years.

Graduation Rates of Students Admitted by CEEB Scores

In the Fall 1972, 50 freshmen not specifically designated as special action were admitted even though their high school GPA was below 3.0. For Fall 1973, the number was 67. Although only 31 of the 1972 group and 45 of the 1973 group were actually coded as CEEB admits, all of them had SAT scores high enough to qualify them for admission by test scores alone.

The graduation rates of these students are well below those of other regularly admitted students. Only 34% of the 1972 group graduated within five

years; only 28% of the 1973 group graduated by the end of their fourth year. This poor showing provides additional evidence that shifting to an admissions policy that lets in students with high test scores and low grades is unlikely to improve the academic success rate of UC students when success is defined in terms of graduation.

Limitations and Brief Discussion

In spite of the consistency of the data, one has to be cautious in generalizing from a simulation study to the somewhat different population that would be affected when the formula is actually used. Students in both the excluded and replacement groups when the formula is applied in a non-simulated setting will have weaker high school records than the students in this study. In addition, the ethnic mix of such "real" groups may include more minorities than did our groups.

That such differences might affect the pattern of results found in our simulation is always a possibility. For example, it is possible that the predictive validity of SAT scores relative to high school grades is not constant across all ranges of academic performance. If so, SAT scores might be better predictors than high school GPA for students with relatively weak high school GPA's, i.e., those who would be affected by the formula, even though SAT scores have less predictive power than grades for the range of students currently accepted and thus present in the simulation study. If this reverse pattern were true, the students actually excluded by the formula might graduate at a lower rate than the students brought in by the formula in their place. However, we think such a possibility is extremely unlikely. The findings of our study are congruent with extensive previous research on test scores (cf. Lavin, 1965). Furthermore, a study of the 1972 and 1973 Berkeley special action freshmen, (Jeffery and Frank, 1978), many of whom had high school GPA's below 3.0, found that SAT scores were no more correlated with graduation rates for these students than for the more highly qualified students in the simulation study. With the special action students, as with almost all groups reported in the literature, high school GPA was a better predictor (though weak one) of graduation than SAT scores. Thus we feel that the data produced by the simulation study are suggestive of what impact applying the BOARS formula may actually have.

Nonetheless, the generality of the present findings would be strengthened if the study were replicated at other UC campuses and produced similar results. Such replications should also investigate what impact the new admissions formula might have on students' major fields of study. The distribution of students among various academic disciplines not only could be mediating the formula's effects on graduation rates but also could directly impact on faculty staffing patterns. The bias of the formula toward men and known differences in HSGPA and test scores by academic fields of study makes the possibility of shifts in the distribution of majors more than idle speculation. The study by Klein and Doby (1975) using freshman and sophomore data at UCLA suggests a BOARDS formula bias toward the physical sciences, engineering, and undeclared majors and away from the humanities, fine arts and pre-professional majors.

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TABLE 1
 Entering Characteristics and Graduation Rates of Regularly Admitted
 Freshmen (California Residents with GPA $\geq$ 3.00)

<u>1972 FRESHMEN</u>						
	<u>MEN</u> (N=1403)		<u>WOMEN</u> (N=1018)		<u>TOTAL</u> (N=2421)	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
High School GPA	3.54	.31	3.58	.31	3.56	.31
SAT - Verbal	554	90.4	543	93.9	549	92.0
SAT - Math	645	84.6	558	88.3	597	92.2
SAT - Total	1179	148.0	1101	156.1	1146	156.2
BOARS Score (adopted formula) ¹	2839	238.2	2837	240.4	2838	239.1
BOARS Score (original formula) ²	2954	252.6	2891	264.9	2928	259.6
	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>	<u>Number</u>	<u>Percent</u>
Graduation within 4 Years	555	40	428	42	978	40
Graduation within 5 Years	841	60	609	60	1450	60
¹ Score based on BOARS formula adopted (.3 SAT-Total + 700 GPA)						
² Score based on BOARS formula originally proposed (SAT-Total + 500 GPA)						
<u>1973 FRESHMEN</u>						
	<u>MEN</u> (N=1607)		<u>WOMEN</u> (N=1130)		<u>TOTAL</u> (N=2737)	
	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>	<u>Mean</u>	<u>S.D.</u>
High School GPA	3.56	.31	3.56	.30	3.57	.31
SAT - Verbal	545	94.1	525	95.7	537	95.2
SAT - Math	618	88.3	548	86.2	589	94.0
SAT - Total	1163	155.6	1074	154.3	1126	161.2
BOARS Score (adopted formula)	2842	240.4	2832	231.1	2838	236.6
BOARS Score (original formula)	2943	261.2	2866	253.4	2912	260.8
	<u>N</u>	<u>Z</u>	<u>N</u>	<u>Z</u>	<u>N</u>	<u>Z</u>
Graduation within 4 Years	556	35	425	38	981	36

TABLE 2

Correlations of Entering Characteristics and Graduation Rates of Regularly Admitted Fall 1972 Freshmen
(California Residents with GPA $\geq$ 3.00)

TOTAL								
	High School GPA	SAT - Verbal	SAT - Math	SAT - Total	BOARS ₁ Score	Original BOARS ₂ Score	4 Year Graduation Rate	5 Year Graduation Rate
High School GPA		.30**	.36**	.39**	.98	.83	.15**	.13**
SAT - Verbal	2322		.44**	.85	.44	.69	.01	-.00
SAT - Math	2322	2322		.85	.50	.73	.05	.05
SAT - Total	2322	2322	2322		.55	.84	.04	.03
BOARS Score ¹	2322	2322	2322	2322		.92	.15**	.12**
Orig. BOARS Score ²	2322	2322	2322	2322	2322		.12**	.09**
4 Year Grad. Rate	2421	2322	2322	2322	2322	2322		.67**
5 Year Grad. Rate	2421	2322	2322	2322	2322	2322	2421	

¹Score based on BOARS formula adopted (.3 SAT-Total + 700 GPA)

²Score based on BOARS formula originally proposed (SAT-Total + 500 GPA)

*p < .05

**p < .01

Note. Correlations, r's, above the diagonal; number of students each correlation based on below the diagonal

TABLE 3

Correlations of Entering Characteristics and Graduation Rates of Regularly Admitted Fall 1973 Freshmen
(California Residents with GPA $\geq$ 3.00)

TOTAL							
	High School GPA	SAT - Verbal	SAT - Math	SAT - Total	BOARS ₁ Score	Original BOARS ₂ Score	4 Year Graduation Rate
High School GPA		.31**	.34**	.38**	.98	.82	.12**
SAT - Verbal	2565		.45**	.85	.46	.71	.04*
SAT - Math	2565	2565		.85	.48	.72	.06**
SAT - Total	2565	2565	2565		.55	.84	.06**
BOARS Score ¹	2565	2565	2565	2565			.12**
Orig. BOARS Score ²	2565	2565	2565	2565	2565		.11**
4 Year Graduation Rate	2737	2565	2565	2565	2565	2565	

*p < .05

**p < .01

¹Score based on BOARS formula adopted (.3 SAT-Total + 700 GPA)

²Score based on BOARS formula originally proposed (SAT-Total + 500 GPA)

Note. Correlations, r's, above the diagonal; number of students each correlation based on below the diagonal.

TABLE 4

Correlations of Entering Characteristics and Graduation Rates of Regularly Admitted 1972 Freshmen
(California Residents with GPA ≥ 3.00)

	High School GPA	SAT - Verbal	SAT - Math	MEN SAT - Total	BOARS ₁ Score ¹	Original BOARS ₂ Score ²	4 Year Graduation Rate	5 Year Graduation Rate
High School GPA		.28**	.38**	.39**	.99	.84	.20**	.17**
SAT - Verbal	1352		.43**	.86	.41	.67	.03	.03
SAT - Math	1352	1352		.83	.50	.72	.08**	.09**
SAT - Total	1352	1352	1352		.54	.82	.07*	.07*
BOARS Score ¹	1352	1352	1352	1352		.92	.20**	.17**
Orig. BOARS Score ²	1352	1352	1352	1352	1352		.17**	.14**
4 Year Grad. Rate	1403	1352	1352	1352	1352	1352		
5 Year Grad Rate	1403	1352	1352	1352	1352	1352	1403	
WOMEN								
High School GPA		.35**	.45**	.46**	.99	.85	.08**	.06**
SAT - Verbal	970		.47**	.87	.48	.71	-.01	-.04
SAT - Math	970	970		.85	.56	.76	.04	.01
SAT - Total	970	970	970		.61	.86	.01	-.02
BOARS Score ¹	970	970	970	970		.93	.08*	.05
Orig. BOARS Score ²	970	970	970	970	970		.06	.03
4 Year Grad. Rate	1018	970	970	970	970	970		
5 Year Grad. Rate	1018	970	970	970	970	970	1018	

¹Score based on BOARS formula adopted (.3 SAT-Total + 700 GPA)

²Score based on BOARS formula originally proposed (SAT-Total + 500 GPA)

*p < .05

**p < .01

Note. Correlations, r's above the diagonal; number of students each correlation based on below the diagonal.

TABLE 5

Correlations of Entering Characteristics and Graduation Rates of Regularly Admitted Fall 1973 Freshmen

(California Residents with GPA $\geq$ 3.00)

	High School GPA	SAT - Verbal	SAT - Math	MEN			Original BOARS ₂ Score ²	4 Year Graduation Rate
				SAT - Total	BOARS ₁ Score ¹			
High School GPA		.34**	.37**	.41**	.98	.84		.16**
SAT - Verbal	1505		.46**	.86	.47	.71		.10**
SAT - Math	1505	1505		.84	.50	.72		.12**
SAT - Total	1505	1505	1505		.57	.84		.13**
BOARS Score ¹	1505	1505	1505	1505				.17**
Orig. BOARS Score ²	1505	1505	1505	1505	1505			.17**
4 Year Graduation Rate	1607	1505	1505	1505	1505	1505		
WOMEN								
High School GPA		.29**	.39**	.39**	.98	.83		.05
SAT - Verbal	1060		.44**	.86	.43	.69		-.03
SAT - Math	1060	1060		.83	.52	.73		.02
SAT - Total	1060	1060	1060		.56	.84		-.01
BOARS Score ¹	1060	1060	1060	1060				.06
Orig. BOARS Score ²	1060	1060	1060	1060	1060			.04
4 Year Graduation Rate	1130	1060	1060	1060	1060	1060		

*p < .05

**p < .01

¹Score based on BOARS formula adopted (.3 SAT-Total + 700 GPA)²Score based on BOARS formula originally proposed (SAT-Total + 500 GPA)

Note. Correlations, r's, above the diagonal; number of students each correlation based on below the diagonal.

TABLE 6

Comparisons of Graduates and Non-graduates - Fall 1972 Freshmen

	<u>After 4 Years</u>				
	GRADUATES		NON-GRADUATES		
	<u>Number</u>	<u>Mean</u>	<u>Number</u>	<u>Mean</u>	<u>Difference Between Means</u>
High School GPA	978	3.62	1443	3.52	.10**
SAT - Verbal	952	551	1370	548	3
SAT - Math	952	603	1370	593	10*
SAT - Total	952	1153	1370	1141	12
BOARS Score (adopted formula) ¹	952	2881	1370	2808	73**
BOARS Score (original formula) ²	952	2964	1370	2903	61**
	<u>After 5 Years</u>				
High School GPA	1450	3.60	971	3.52	.08**
SAT - Verbal	1401	549	921	549	0
SAT - Math	1401	601	921	591	10**
SAT - Total	1401	1150	921	1140	10
BOARS Score (adopted formula) ¹	1401	2861	921	2803	58**
BOARS Score (original formula) ²	1401	2947	921	2898	51**

* p < .05

** p < .01

¹ Score based on BOARS formula adopted (.3 SAT-Total + 700 GPA)² Score based on BOARS formula originally proposed (SAT-Total + 500 GPA)

TABLE 7

Comparisons of Graduates and Non-Graduates - Fall 1973 Freshmen

After 4 Years

	GRADUATES		NON-GRADUATES		Difference Between Means
	<u>Number</u>	<u>Mean</u>	<u>Number</u>	<u>Mean</u>	
High School GPA	981	3.62	1756	3.54	.08**
SAT - Verbal	936	542	1629	534	8*
SAT - Math	936	597	1629	585	12**
SAT - Total	936	1138	1629	1119	19**
BOARS Score (adopted formula) ¹	936	2877	1629	2815	62**
BOARS Score (original formula) ²	936	2949	1629	2890	59**

*p <.05

**p <.01

¹ Score based on BOARS formula adopted (.3 SAT-Total + 700 GPA)² Score based on BOARS formula originally proposed (SAT-Total + 500 GPA)

TABLE 8

Application of New Admissions Formula to Fall 1972 Freshmen: .3 SAT + 700 GPA $\geq$ 2425
 (California Residents with High School GPA $\geq$ 3.00)

<u>Ethnicity</u>	Eligible by Formula			Ineligible by Formula			Total	
	<u>N</u>	<u>%</u>	<u>Percent Graduated</u>	<u>N</u>	<u>%</u>	<u>Percent Graduated</u>	<u>N</u>	<u>Percent Graduated</u>
Major Subgroups:								
Asians	381	97.7	73.5	9	2.3	55.6	390	73.1
Blacks	44	95.7	59.1	2	4.3	50.0	46	58.7
Chicanos	23	92.0	65.2	2	8.0	0	25	60.0
Whites	1628	98.8	58.2	19	1.2	57.9	1647	58.2
<u>Sex</u>								
Male	1339	99.0	60.6	13	1.0	46.2	1352	60.5
Female	950	97.9	60.1	20	2.1	60.0	970	60.1
Total Group	2289	98.6	60.4	33	1.4	54.5	2322	60.3

TABLE 9

Application of New Admissions Formula to Fall 1973 Freshmen: .3 SAT + 700 GPA > 2425
(California Residents with High School GPA > 3.00)

<u>Ethnicity</u>	Eligible by Formula			Ineligible by Formula			Total	
	<u>N</u>	<u>%</u>	<u>Percent Graduated</u>	<u>N</u>	<u>%</u>	<u>Percent Graduated</u>	<u>N</u>	<u>Percent Graduated</u>
Major Subgroups:								
Asians	463	99.6	41.5	2	.4	0	465	41.3
Blacks	42	95.5	33.3	2	4.5	50.0	44	34.1
Chicanos	26	86.7	26.9	4	13.3	0	30	23.3
Whites	1821	98.8	35.5	22	1.2	22.7	1843	35.4
<u>Sex</u>								
Male	1483	98.5	35.4	22	1.5	13.6	1505	35.1
Female	1048	98.9	38.5	12	1.1	41.7	1060	38.5
Total Group	2531	98.7	36.7	34	1.3	23.5	2565	36.5

TABLE 10

Comparison of Effects of Admission by the New UC Formula to Admission on Grades Alone:

A simulation study on Fall 1972 freshmen using 3.3 as the GPA cut-off

Ethnicity	Eligible by Both			Ineligible by Both			Eligible by GPA, Ineligible by Formula			Ineligible by GPA, Eligible by Formula			Total		
	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad
Major Subgroups:															
Asians	303	77.7	75.6	72	18.5	62.5	15	3.8	73.3	0	0	0	390	100	73.1
Blacks	22	47.8	68.2	20	43.5	45.0	3	6.5	100	1	2.2	0	46	100	58.7
Chicanos	19	76.0	68.4	6	24.0	33.3	0	0	0	0	0	0	25	100	60.0
Whites	1186	72.0	60.2	392	23.8	51.8	30	1.8	60.0	39	2.4	59.0	1647	100	58.2
Sex:															
Male	963	71.2	64.7	329	24.3	48.0	24	1.8	62.5	36	2.7	61.1	1352	100	60.5
Female	725	74.7	61.1	209	21.5	56.0	24	2.5	70.8	12	1.2	50.0	970	100	60.1
Total Group	1688	72.7	63.2	538	23.2	51.1	48	2.1	66.7	48	2.1	58.3	2322	100	60.3

¹Percent graduated within 5 years.

NOTE: New UC formula: .3 SAT-Total + 700 GPA

TABLE 11

Comparison of Effects of Admission by the New UC Formula to Admission on Grades Alone:

A simulation study on Fall 1973 freshmen using 3.3 as the GPA cut-off

Ethnicity	Eligible by Both			Ineligible by Both			Eligible by GPA, Ineligible by Formula			Ineligible by GPA, Eligible by Formula			Total		
	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad
Major Subgroups:															
Asians	352	75.7	44.6	86	18.5	31.4	20	4.3	30.0	7	1.5	28.6	465	100	41.3
Blacks	27	61.4	33.3	15	34.1	33.3	2	4.5	50.0	0	0	0	44	100	34.1
Chicanos	18	54.5	27.8	12	36.4	16.7	0	0	0	0	0	0	33	100	21.2
Whites	1356	73.6	37.1	407	22.1	29.0	34	1.8	41.2	46	2.5	37.0	1843	100	35.4
Sex:															
Male	1094	72.7	38.4	344	22.9	25.3	24	1.6	20.3	43	2.9	37.2	1505	100	35.1
Female	790	74.5	38.9	223	21.0	36.3	33	3.1	51.5	14	1.3	21.4	1060	100	38.5
Total Group	1884	73.5	38.6	567	22.1	29.6	57	2.2	38.6	57	2.2	33.3	2565	100	36.5

¹Percent graduated within 4 years.

NOTE: New UC formula: .3 SAT-Total + 700 GPA

TABLE 12

Comparison of Effects of Admission by the Original BOARS Formula to Admission by Grades Alone:

A simulation study on Fall 1972 freshmen using 3.3 as the GPA cut-off

Ethnicity	Eligible by Both			Ineligible by Both			Eligible by GPA, Ineligible by Formula			Ineligible by GPA, Eligible by Formula			Total		
	N	%	% ¹	N	%	% ¹	N	%	% ¹	N	%	% ¹	N	%	% ¹
Major Subgroups:															
Asians	283	72.6	76.3	62	15.9	62.9	35	9.0	68.6	10	2.6	60.0	390	100	73.1
Blacks	10	21.7	60.0	20	43.5	45.0	15	32.6	80.0	1	2.2	0	46	100	58.7
Chicanos	16	64.0	68.8	6	24.0	33.3	3	12.0	66.7	0	0	0	25	100	60.0
Whites	1108	67.3	60.2	294	17.9	54.1	108	6.6	60.2	137	8.3	48.9	1647	100	58.2
Sex:															
Male	915	67.7	64.6	226	16.7	49.1	72	5.3	65.3	139	10.3	49.6	1352	100	60.5
Female	653	67.3	61.3	192	19.8	56.8	96	9.9	62.5	29	3.0	48.3	970	100	60.1
Total Group	1568	67.5	63.2	418	18.0	52.6	168	7.2	63.7	168	7.2	49.4	2322	100	60.3

¹Percent graduated within 5 years.

NOTE: Original BOARS formula: SAT -Total + 500 GPA

TABLE 13

Comparison of Effects of Admission by the Original BOARS Formula to Admission by Grades Alone:

A simulation study on Fall 1973 freshmen using 3.3 as the GPA cut-off

Ethnicity	Eligible by Both			Ineligible by Both			Eligible by GPA, Ineligible by Formula			Ineligible by GPA, Eligible by Formula			Total		
	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad	N	%	% ¹ Grad
Major Subgroups:															
Asians	310	66.7	45.5	75	16.1	32.0	62	13.3	35.5	18	3.9	27.8	465	100	41.3
Blacks	14	31.8	21.4	14	31.8	35.7	15	34.1	46.7	1	2.3	0	44	100	43.1
Chicanos	15	50.0	26.7	12	40.0	16.7	3	10.0	33.3	0	0	0	30	100	23.3
Whites	1285	69.7	37.4	290	15.7	30.7	105	5.7	35.2	163	8.8	28.2	1843	100	35.4
Sex:															
Male	1041	69.2	38.6	240	15.9	26.7	77	5.1	29.9	147	9.8	26.5	1505	100	35.1
Female	705	66.5	39.1	189	17.8	37.0	118	11.1	40.7	48	4.5	29.2	1060	100	38.5
Total Group	1746	68.1	38.8	429	16.7	31.2	195	7.6	36.4	195	7.6	27.2	2565	100	36.5

¹Percent graduated within 4 years.

NOTE: Original BOARS formula: SAT-Total + 500 GPA

FIGURE I

Groups in the Simulation Study

Eligibility According to BOARS Formula

		Eligible	Not Eligible
Eligibility According To Grade Criterion	Eligible	Eligible	Excluded Group, Newly Ineligible
	Not Eligible	Replacement Group, Newly Eligible	Not Eligible

APPENDIX A

Percentage of 1972 Freshmen Graduating Within 5 Years for Different Ranges of High School GPA and SAT Scores

High School GPA	N	Percent Graduating	Verbal SAT	N	Percent Graduating	Math SAT	N	Percent Graduating	Total SAT	N	Percent Graduating
<3.00	50	34%	200 - 299	6	33%	200 - 299	3	67%	500 - 599	2	100%
3.00 - 3.09	179	54	300 - 349	23	52	300 - 349	8	50	600 - 699	9	33
3.10 - 3.19	201	54	350 - 399	81	56	350 - 399	29	52	700 - 799	22	50
3.20 - 3.29	229	47	400 - 449	217	62	400 - 449	80	63	800 - 899	99	60
3.30 - 3.39	205	57	450 - 499	344	62	450 - 499	217	55	900 - 999	255	59
3.40 - 3.49	163	59	500 - 549	449	62	500 - 549	331	57	1000 - 1099	463	59
3.50 - 3.59	270	62	550 - 599	482	57	550 - 599	489	60	1100 - 1199	610	61
3.60 - 3.69	214	58	600 - 649	387	59	600 - 649	473	61	1200 - 1299	497	58
3.70 - 3.79	234	62	650 - 699	266	59	650 - 699	393	65	1300 - 1399	307	59
3.80 - 3.89	245	63	700 - 749	113	58	700 - 749	243	54	1400 - 1499	117	69
3.90 - 4.00	483	70	750 - 800	29	66	750 - 800	131	68	1500 - 1600	16	50

APPENDIX B

Percentage of 1973 Freshmen Graduating Within 4 Years for Different Ranges of High School GPA and SAT Scores

High School GPA	N	Percent Graduating	Verbal SAT	N	Percent Graduating	Math SAT	N	Percent Graduating	Total SAT	N	Percent Graduating
< 3.00	67	28%	200 - 299	23	35%	200 - 299	2	50%	500 - 599	2	50%
3.00 - 3.09	180	28	300 - 349	39	18	300 - 349	5	60	600 - 699	10	20
3.10 - 3.19	213	29	350 - 399	127	38	350 - 399	49	39	700 - 799	42	43
3.20 - 3.29	271	31	400 - 449	260	34	400 - 449	118	42	800 - 899	141	38
3.30 - 3.39	199	29	450 - 499	377	36	450 - 499	235	32	900 - 999	370	34
3.40 - 3.49	197	30	500 - 549	537	36	500 - 549	420	31	1000 - 1099	493	32
3.50 - 3.59	334	35	550 - 599	470	37	550 - 599	496	36	1100 - 1199	620	35
3.60 - 3.69	266	37	600 - 649	396	41	600 - 649	466	36	1200 - 1299	490	38
3.70 - 3.79	238	39	650 - 699	224	33	650 - 699	409	34	1300 - 1399	296	43
3.80 - 3.89	296	42	700 - 749	96	43	700 - 749	240	46	1400 - 1499	84	44
3.90 - 4.00	543	43	750 - 800	16	56	750 - 800	125	50	1500 - 1600	17	59